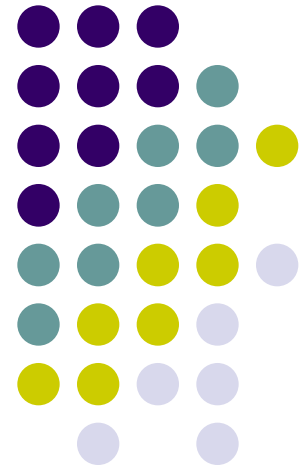


Medical Physics Workforce Study Components

Study Conducted by
**The Center for Health Workforce
Studies**

Presented by
Margaret Langelier





Project Goals and Research Activities

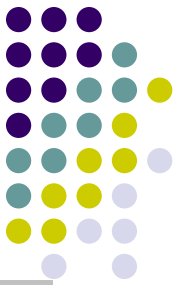
- To evaluate current supply and demand
- To understand education and career pathways
- To identify emerging issues
- To evaluate the impact of new ABR requirements to sit for the certification exams
- **Qualitative and Quantitative Activities**
 - Literature Review
 - Background Report
 - Interviews
 - Survey of Currently Active MP Professionals
 - Modeling of Future Supply and Demand for MP Professionals

What We Learned from Literature and AAPM Data



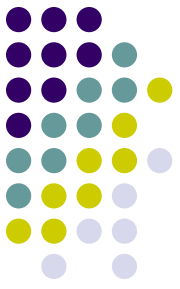
- Relatively new profession
- Unique in healthcare
(scientific/technical/clinical profession)
- Historically, no single educational or career pathway to the profession
- Three main specialty areas
- Primary employment in hospitals and educational institutions

Characteristics of MP Workforce 2008



- Many MPs were certified in one or more areas of medical physics
- Mean years of MP experience in 2008 was 14.7 years
- MPs were on average 46.5 years of age and a quarter were over age 56
- Approximately 14% of MPs had secondary employment
- Many worked with other professionals -55% supervise others
- 29% did some consulting work but just 7.2% consulted full time.

Gender	
Male	80.4%
Female	19.6%
Level of Education	
Doctoral	50.7%
Master's	48.3%
Age	
Mean Age	46.5 years
Primary Discipline	
Radiation Oncology	77.8%
Diagnostic Imaging	13.0%
Nuclear Medicine	2.3%
Certification	
ABR Therapeutic Radiologic Physics	44.0%
ABR Diagnostic Radiologic Physics	12.1%
ABR Medical Nuclear Physics	2.4%
ABHP Health Physics	2.5%
Some ABMP Certification	12.0%
Other	8.9%
Employment Settings	
Hospitals	33.7%
Medical School/University	31.1%
Cancer Centers	9.1%
Medical Service Group	8.9%
Self Employed	3.9%
Physicians' Groups	6.3%
Industrial Firm	4.1%
Government	1.5%
Type of Position	
Clinical	79.0%
Academic	9.5%
Administrative	3.1%
Regulatory	2.6%
Product Development	5.0%
Research	0.5%



MP Profile (cont.)

- Mean annual income in 2008 was \$159,900.
- Mode for change in annual salary was 3%.
- Most common employer benefit was medical insurance
- About 8% of MPs changed jobs in 2008 which was a lower percent than in previous years
- MPs were required to be licensed in four states while 25 states required registration.
- MPs were increasingly providing clinical services while fewer MPs were engaged in research.

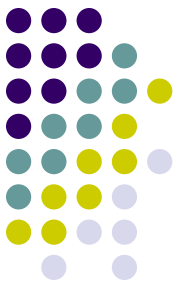
MP Activity



Percent of MPs by Type of Position, 1995 to 2008

Year	Clinical	Academic	Administrative	Regulatory	Product Development & Sales	Research	Other
1995	66.4%	10.1%	6.1%	4.5%	3.4%	5.8%	3.8%
1996	66.7%	9.8%	5.9%	4.2%	3.7%	6.1%	3.7%
1997	69.8%	8.7%	4.9%	4.2%	3.4%	5.9%	3.0%
1998	68.3%	8.9%	5.4%	2.9%	3.1%	4.6%	6.8%
1999	71.1%	8.8%	4.6%	3.2%	3.1%	4.8%	4.4%
2000	70.4%	8.8%	3.8%	3.7%	3.4%	4.7%	5.1%
2001	73.1%	8.2%	3.2%	3.3%	3.1%	5.1%	4.0%
2002	72.8%	8.2%	3.3%	3.7%	2.5%	5.9%	3.8%
2003	71.8%	8.3%	3.5%	3.6%	2.6%	5.5%	4.7%
2004	72.2%	8.7%	3.6%	3.0%	2.1%	4.1%	6.4%
2005	69.5%	8.0%	3.9%	3.6%	2.3%	5.0%	7.7%
2006	75.6%	10.5%	3.7%	3.2%	6.0%	0.6%	0.4%
2007	77.3%	9.4%	3.9%	2.8%	5.3%	0.8%	0.5%
2008	79.0%	9.5%	3.1%	2.6%	5.0%	0.5%	0.3%

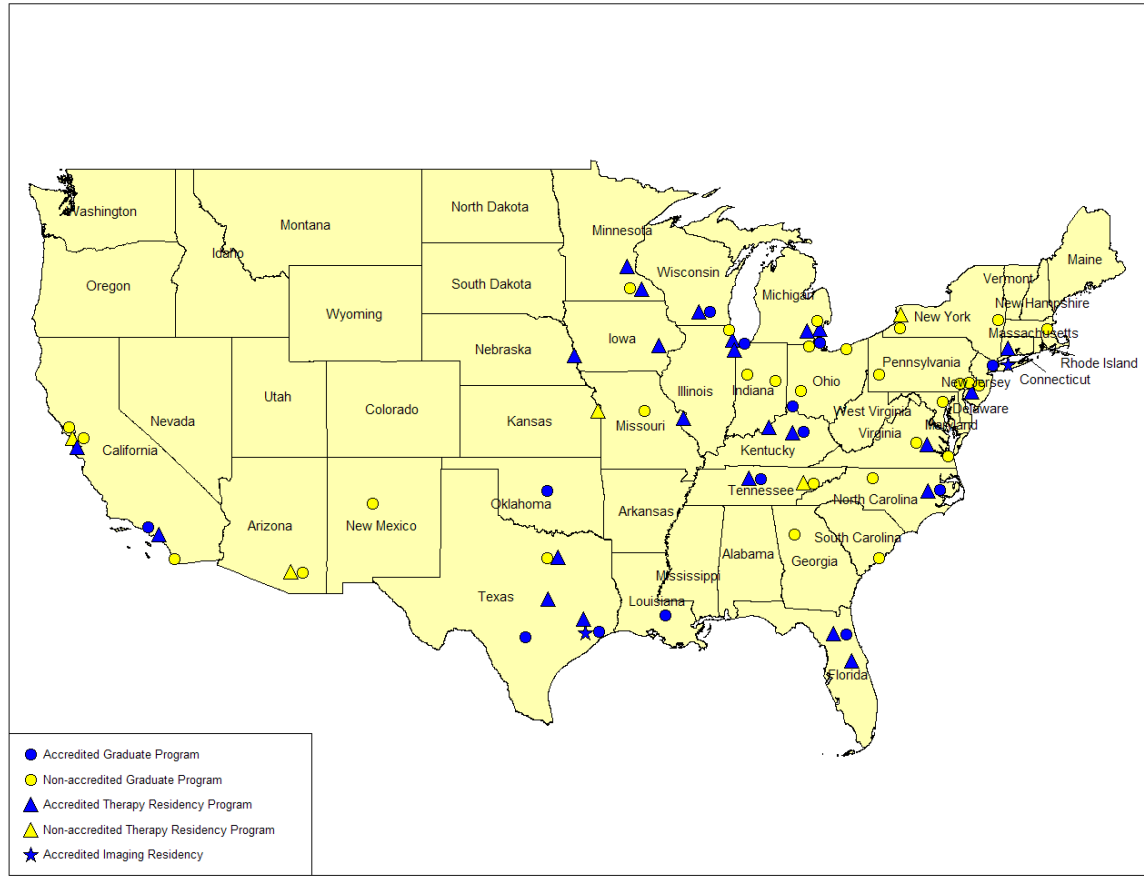
Source: AAPM Professional Information Surveys 1995 to 2008, American Institute of Physics.



MP Education Programs

- 48 MP graduate programs, 19 accredited
- 25 accredited residency programs in radiation oncology
- 3 accredited residency programs in diagnostic imaging
- Five accredited graduated programs and 7 accredited residency programs in Canada
- Programs are not well distributed geographically

Map of MP Education and Residency Programs



MP Post Doctoral Students and Residents



Percent of Survey Respondents Who Were Medical Physics Post Doctoral Students or Residents, 1995 to 2008

- The percent of post doctoral MP fellows and MP residents increased from 1995 to 2008.

Year	Post-Doctoral Fellows	Residents
1995	0.9%	0.6%
1996	0.7%	0.4%
1997	0.8%	0.2%
1998	0.7%	0.7%
1999	0.9%	0.4%
2000	0.7%	0.7%
2001	0.9%	0.8%
2002	1.3%	0.6%
2003	1.0%	1.5%
2004	1.9%	2.0%
2005	1.9%	2.0%
2006	1.6%	2.0%
2007	2.3%	1.9%
2008	1.9%	2.3%

Source: AAPM Professional Information Surveys 1995 to 2008, American Institute of Physics.

Interesting Findings Related to Increase in Demand for MP Services During Introduction of IMRT



- During the period from 1999 to 2005, MPs more often changed jobs than in previous or subsequent years suggesting that this was a period of higher demand for MPs.

Percent of MPs Changing Jobs. 1995 to 2008

Year	Percent of Survey Respondents Making Job Change
1995	4.8%
1996	4.6%
1997	6.7%
1998	8.2%
1999	10.8%
2000	10.5%
2001	10.0%
2002	12.4%
2003	10.4%
2004	11.1%
2005	10.2%
2006	9.0%
2007	9.4%
2008	8.4%

Source: AAPM Professional Information Surveys 1995 to 2008



Percent of MPs Changing Jobs and Changes in Salaries, by Year With Inflation Adjustment, 1995 to 2008

Year	Percent of Survey Respondents Making Job Change	Mean Salary Increase	Mean Salary Increase (2008 Dollars)	Median Salary Increase	Median Salary Increase (2008 Dollars)	Mode of Increase	Mode of Increase (2008 Dollars)	% of Job Changers Accepting Decrease in Salary	Mean Salary Decrease	Mean Salary Decrease (2008 Dollars)	Median Salary Decrease	Median Salary Decrease (2008 Dollars)
1995	4.8%	\$17,525	\$24,759	\$10,000	\$14,127	\$0	\$0	18.2%	-\$11,568	-\$16,342	-\$6,750	-\$9,536
1996	4.6%	\$13,788	\$18,920	\$10,000	\$13,722	\$0	\$0	12.8%	-\$16,960	-\$23,273	-\$9,000	-\$12,350
1997	6.7%	\$13,886	\$18,627	\$10,750	\$14,421	\$10,000	\$13,415	10.7%	-\$14,719	-\$19,745	-\$8,000	-\$10,732
1998	8.2%	\$15,458	\$20,418	\$12,000	\$15,851	\$0	\$0	10.6%	-\$10,433	-\$13,781	-\$5,000	-\$6,604
1999	10.8%	\$16,371	\$21,157	\$12,000	\$15,508	\$0	\$0	14.1%	-\$17,112	-\$22,114	-\$14,000	-\$18,093
2000	10.5%	\$22,206	\$27,764	\$17,000	\$21,255	\$0	\$0	12.5%	-\$23,167	-\$28,965	-\$18,500	-\$23,131
2001	10.0%	\$21,397	\$26,013	\$17,000	\$20,667	\$20,000	\$24,314	6.6%	-\$14,708	-\$17,881	-\$9,250	-\$11,245
2002	12.4%	\$23,113	\$27,661	\$20,000	\$23,936	\$10,000	\$11,968	7.9%	-\$18,105	-\$21,668	-\$10,000	-\$11,968
2003	10.4%	\$28,542	\$33,398	\$25,000	\$29,253	\$10,000	\$11,701	6.6%	-\$22,400	-\$26,211	-\$13,000	-\$15,212
2004	11.1%	\$31,026	\$35,362	\$25,000	\$28,494	\$20,000	\$22,795	8.3%	-\$36,271	-\$41,341	-\$30,000	-\$34,193
2005	10.2%	\$29,300	\$32,301	\$25,000	\$27,561	\$20,000	\$22,048	10.8%	-\$58,919	-\$64,954	-\$23,250	-\$25,631
2006	9.0%	\$29,290	\$31,281	\$23,000	\$24,563	\$10,000	\$10,680	11.1%	-\$32,771	-\$34,999	-\$20,000	-\$21,359
2007	9.4%	\$31,676	\$32,892	\$25,000	\$25,960	\$20,000	\$20,768	11.0%	-\$20,741	-\$21,538	-\$10,000	-\$10,384
2008	8.4%	\$33,224	\$33,224	\$25,000	\$25,000	\$20,000	\$20,000	14.0%	-\$29,283	-\$29,283	-\$19,000	-\$19,000

Source: AAPM Professional Information Surveys 1995 to 2008, American Institute of Physics, U.S. Census Bureau.



Employment at Multiple Institutions

- Although the percent of MPs working at multiple institutions remained relatively constant from 1995 to 2008, in 1999, 2000, and 2001, more MPs reported working at multiple institutions than in other years suggesting increased demand for MP services in those years.

Percent of MPs Working at Multiple Institutions by Year, 1995 to 2008

Year	% of MPs Working at Multiple Institutions
1995	45.5%
1996	43.6%
1997	47.4%
1998	46.6%
1999	48.4%
2000	48.2%
2001	48.1%
2002	46.7%
2003	46.3%
2004	46.3%
2005	42.0%
2006	42.2%
2007	42.3%
2008	42.3%

Source: AAPM Professional Information Surveys 1995 to 2008, American Institute of Physics.



Percent of MPs with Secondary Employment by Setting of Secondary Employment, 2001 to 2008

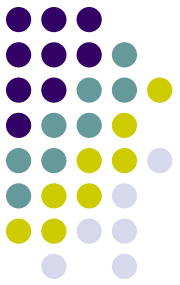
- The high percent of MPs with secondary employment in 2001 and 2002 steadily declined over the decade suggesting that demand for MPs was changing.

- The percent of MPs with secondary employment who were self employed also steadily decreased from a high in 2001 of 74.2% to 59.3% of MPs with secondary employment in 2008.

	2001	2002	2003	2004	2005	2006	2007	2008
Percent of Survey Respondents W/ Secondary Employment	20.8%	19.0%	18.8%	18.1%	17.1%	15.8%	14.6%	13.7%
Secondary Employment Setting								
Private Hospital	10.0%	10.4%	8.1%	8.7%	10.7%	9.3%	8.7%	10.5%
Government Hospital	1.6%	1.3%	1.6%	1.4%	1.6%	1.6%	0.8%	1.5%
Medical School	3.7%	4.7%	4.9%	5.5%	4.8%	5.0%	5.4%	6.2%
College/ University	2.9%	2.0%	1.5%	1.6%	2.0%	2.0%	3.0%	3.2%
Government	0.4%	1.1%	1.1%	0.5%	0.5%	0.6%	0.6%	0.3%
Medical Service Group	3.7%	4.8%	5.5%	5.4%	4.5%	4.6%	4.7%	5.3%
Physicians' Group	1.4%	2.2%	1.3%	1.7%	2.0%	1.7%	0.9%	1.8%
Industrial Firm	2.1%	1.7%	1.8%	1.7%	2.0%	1.4%	1.4%	1.5%
Self-Employed	74.2%	71.7%	66.4%	64.8%	62.7%	61.9%	62.8%	59.3%
Student	0.0%	0.0%	0.8%	0.6%	0.3%	0.3%	0.5%	0.6%
Retired	0.0%	0.0%	2.1%	1.9%	1.7%	2.5%	2.2%	1.8%
Other	0.0%	0.0%	4.9%	6.0%	7.2%	6.3%	5.4%	5.4%
Cancer Center	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	3.6%	2.7%
Total	100.0%	99.9%	100.0%	99.8%	100.0%	100.0%	100.0%	100.1%

Source AAPM Professional Information Surveys 2001 to 2008, American Institute of Physics.

Note: Totals do not equal 100% due to rounding error.



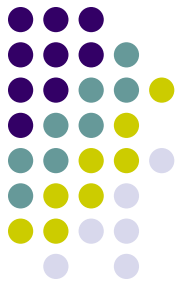
Percent of MPs by Consulting Effort, 1995 to 2008

● The percent of MPs providing part time or full time consulting services declined in 2000, 2001, and 2002 suggesting that there was less MP capacity to provide consulting services.

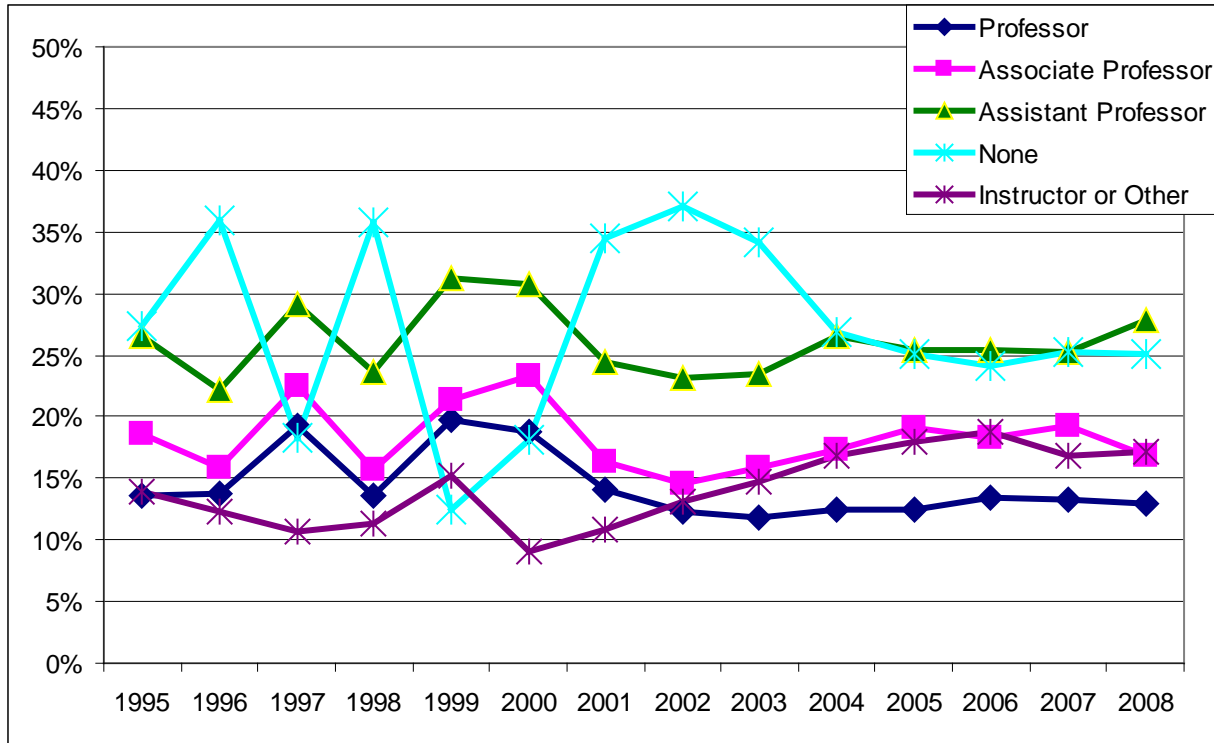
Year	No Consulting	Full-Time Consulting	Part-Time Consulting
1995	58.3%	8.7%	33.1%
1996	61.7%	8.7%	29.7%
1997	59.4%	8.8%	31.8%
1998	60.1%	8.2%	31.6%
1999	61.6%	7.9%	30.5%
2000	67.4%	4.8%	27.7%
2001	66.5%	4.9%	28.6%
2002	65.2%	6.7%	28.1%
2003	61.7%	7.3%	31.0%
2004	65.7%	6.6%	27.7%
2005	65.4%	6.7%	27.9%
2006	67.7%	7.7%	24.7%
2007	70.5%	6.1%	23.4%
2008	71.0%	7.2%	21.8%

Source: AAPM Professional Information Surveys 1995 to 2008, American Institute of Physics

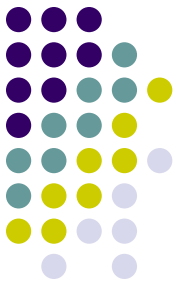
Percent of MPs In Academic Employment by Academic Rank, 1995 to 2008



There were noticeable fluctuations in academic appointments especially in 1999 and 2000 and continuing in subsequent years and especially among those with no academic rank



Source: AAPM Professional Information Surveys 1995 to 2008, American Institute of Physics.



MP Employment

- In 2001, 26.2% of MPs indicated they were the only MP at their institution. This is substantially higher than in any other year.

Percent of MPs by Structure of Employment, 1995 to 2008

Year	Only MP at Institution	Only MP in Department	Shares duties with other MPs	Other
1995	18.0%	10.9%	64.1%	7.0%
1996	18.2%	11.6%	63.6%	6.7%
1997	18.1%	11.1%	65.4%	5.3%
1998	18.3%	9.6%	66.3%	5.8%
1999	17.6%	10.8%	65.6%	5.9%
2000	17.9%	9.5%	67.9%	4.8%
2001	26.2%	7.3%	62.4%	4.2%
2002	16.7%	9.4%	68.9%	5.0%
2003	15.7%	8.7%	69.1%	6.5%
2004	14.5%	8.5%	70.2%	6.9%
2005	14.6%	9.0%	70.7%	5.7%
2006	*	20.2%+	74.0%	5.7%
2007	*	19.9%+	74.9%	5.2%
2008	*	19.5%+	75.7%	4.8%

Source: AAPM Professional Information Surveys 1995 to 2008, American Institute of Physics.

Note: +Two response options (only MP in institution or only MP in department) were combined in the 2006, 2007, and 2008 surveys.

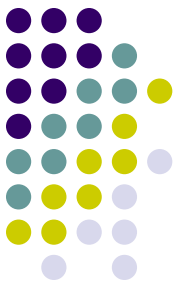


Percent of MPs Who Changed Jobs by Reason for Job Change, 1995, 1997, 1999, 2002, 2004, 2006, and 2008

Reason For Job Change	1995	1997	1999	2002	2004	2006	2008
Higher salary	12.6%	23.4%	20.3%	20.7%	18.8%	14.3%	15.2%
Work load	10.4%	8.4%	11.2%	13.1%	8.9%	7.5%	6.6%
Personality conflict	11.9%	5.8%	7.1%	5.8%	8.9%	8.6%	6.6%
Cutbacks	11.1%	7.1%	2.0%	1.1%	1.8%	1.9%	1.2%
Didn't get tenure	0.7%	0.0%	1.5%	0.7%	0.0%	0.8%	0.4%
Professional growth	33.3%	37.7%	36.0%	32.7%	24.1%	26.7%	24.2%
Sexual harassment	0.7%	0.6%	0.5%	0.4%	0.4%	0.0%	0.0%
Geographic change (2004, 2005, 2006)	*	*	*	*	13.5%	15.0%	19.7%
Position eliminated (2004, 2005, 2006)	*	*	*	*	3.2%	4.1%	3.7%
Fired (2004, 2005, 2006)	*	*	*	*	2.5%	3.4%	3.3%
Other	19.3%	16.9%	21.3%	25.5%	18.1%	17.7%	19.3%

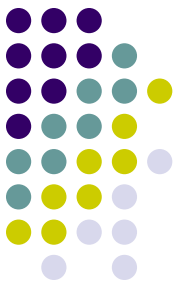
- Higher salary was an impetus for change for about a fifth of MPs in 1997, 1999, 2002, and 2004.
- Professional growth was an impetus for change for about a third of MPs in 1995, 1997, 1999, and 2002

Source: AAPM Professional Information Surveys 1995 to 2008, American Institute of Physics.



The Interviews

- 45 individual interviews
- Three focus groups with 29 participants
 - New professionals
 - Diagnostic imaging MPs
 - Students and residents
- Interview protocols, core questions, important qualitative information
- Questions covered education and career pathways, opinions about new certification and education requirements, etc.



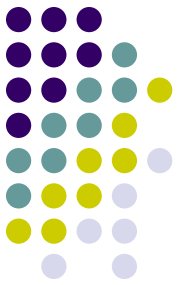
Common Themes

- Workforce is undergoing professional change
- MPs are uncertain about the impact of change on the profession, in the marketplace, and on quality of care
- Standardizing entry requirements might limit the interdisciplinary creativity that has been the hallmark of medical physics.
- Supply of MPs is in equilibrium but that is tenuous considering the new ABR requirements
- Future demand for MPs depends on a number of external market factors



Common Themes, Cont.

- Demand for MPs is sensitive to the introduction of new technology
- New ABR requirements will move medical physics further from science and research to a mainly clinical focus
- Accreditation of education programs is an immediate valued goal
- DMP is an interesting educational model that could serve the immediate need but the long term impact is uncertain



Common themes (cont.)

- The 2014 residency could create a bottleneck. There is a pervasive concern about the establishment of sufficient programs.
- There are special challenges to building diagnostic imaging and nuclear medicine residency programs.

Workforce Survey



● Description

- ❖ Survey of currently active MPs
- ❖ Electronic
- ❖ Conducted beginning in October 2009 ending in February 2010
- ❖ 5,487 members of AAPM solicited
- ❖ 2,637 useable responses
- ❖ Response rate 48.1%
- ❖ Questions asked about personal demographics, education and career pathways, certification, work activities, annual income, recruitment of other MPs, and attitudes and opinions about pertinent issues.

Key Findings from the Workforce Survey



- Younger MPs were more gender and racially/ethnically diverse than older MPs
- Younger MPs were more likely to have learned about the MP profession earlier in their education/ career trajectory
- 34% of MPs had a previous career.

Percent of MPs for Whom Medical Physics Was a First Profession, by Years of Experience in Medical Physics, 2009

Professional Experience	% of MPs For Whom Medical Physics Was a First Profession
Students and Residents	77.2%
Less than 5 years	65.3%
5 to 9 years	53.2%
10 to 19 years	65.1%
20 years or more	68.5%
Total	65.8%

Source: CHWS, Survey of Medical Physicists, 2009, Entry Question 2.

Academic Discipline by MP Degree

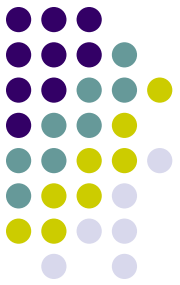


Academic Discipline by MP Degree, 2009

	Bachelor's		Master's		Doctorate	
	Number	Percent	Number	Percent	Number	Percent
Medical Physics	16	0.7%	759	34.5%	360	29.5%
Health Physics	37	1.6%	119	5.4%	15	1.2%
Physics	1097	46.5%	456	20.7%	225	18.4%
Applied Physics	36	1.5%	23	1.0%	17	1.4%
Radiological Physics	0	0.0%	160	7.3%	22	1.8%
Nuclear/ Atomic Physics	0	0.0%	58	2.6%	106	8.7%
Biomedical Physics	0	0.0%	54	2.5%	71	5.8%
Other Physics	113	4.8%	97	4.4%	111	9.1%
Physics and Other Major(s)	289	12.2%	0	0.0%	0	0.0%
Nuclear Engineering	106	4.5%	108	4.9%	62	5.1%
Biomedical Engineering	52	2.2%	66	3.0%	55	4.5%
Electrical Engineering	100	4.2%	35	1.6%	23	1.9%
Chemical Engineering	0	0.0%	6	0.3%	0	0.0%
Other Engineering	97	4.1%	35	1.6%	17	1.4%
Computer Science or Engineering	20	0.8%	11	0.5%	7	0.6%
Radiological, Nuclear Science Technology	87	3.7%	138	6.3%	69	5.7%
Mathematics	36	1.5%	17	0.8%	3	0.2%
Biology or Chemistry	172	7.3%	27	1.2%	20	1.6%
Medicine	18	0.8%	0	0.0%	0	0.0%
Biophysical, Biomedical Science	0	0.0%	0	0.0%	20	1.6%
Other Science	53	2.2%	28	1.3%	14	1.1%
Other Non-Science	31	1.3%	6	0.3%	4	0.3%
Total	2360	100.0%	2203	100.0%	1221	100.0%

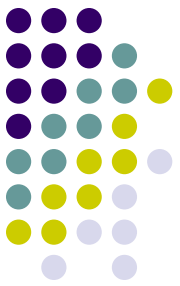
Source: CHWS, Survey of Medical Physicists, 2009, *Entry* Question 2, *Education* Question 1

- MPs had diverse educational backgrounds



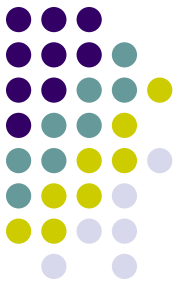
Key Findings (cont.)

- MPs worked mainly in hospital settings including community hospitals (29%), hospital networks (26%) and academic medical centers (22%). 31% of MPs had secondary employment.
- 17% of MPs provided some consulting services but only about 10% of MPs consulted full time (100%).
- MPs consulting in radiation oncology spent more work hours providing those services than other MP specialties. MPs consulting in diagnostic imaging spent a slightly higher percentage of work time in consulting activities than other MP specialties.
- Among academic MPs, 78% provided educational services in a classroom setting. Nuclear medicine MPs (78%) and diagnostic imaging MPs (50%) provided instruction in laboratory settings.
- Almost a third (32%) of diagnostic imaging MPs working in academics had a tenured professorship but more than half of MPs in academics (51%) had a non-tenure track professorship



Productivity and Income

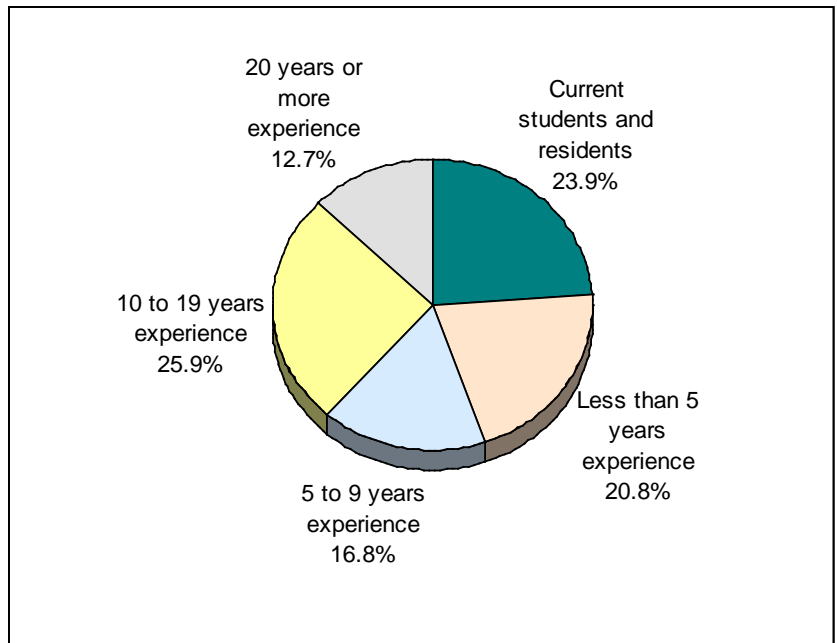
- Radiation oncology MPs served on average 51 patients weekly
- Diagnostic imaging MPs serviced 88 x-ray machines, 49 fluoroscopy machines, 26 mammography units, 17 ultrasound machines, 16 MRIs, 10 SPECT machines and 7 PET or PET/CT machines annually.
- MPs who worked with others worked with on average 5 other MPs, 5 radiation oncologists, 4 dosimetrists, 10 radiation therapists, and 20 radiologic technologists in their places of employment.
- Mean annual income (2008) for MPs with PhDs was \$168,900 and for MPs with master's degrees it was \$154,100.
- Mean income was highest in the Northeast both for those who were directly employed (\$166,200) and for those who provided consulting services (\$178,800).
- MPs with 20 or more years experience had the highest mean annual income (\$184,600) of MPs in any experience cohort.
- Certified MPs reported higher average annual incomes (\$180,400) than non-certified MPs (\$131,700). MPs certified by ABMP in radiation oncology physics had the highest mean annual income among certified MPs (\$212,000).



MP Residency Programs

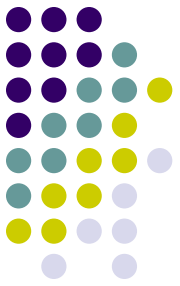
- Only 8% of MPs were currently enrolled in or had in the past completed a clinical residency program.
- More than three quarters of current residents (79%) indicated their highest degree was a PhD.
- 62% of current residents indicated that their residency program was CAMPEP accredited. One-fifth of those who were currently enrolled in residencies (21%) indicated that their residency program was in the process of accreditation.

Enrollment in or Graduation from a Residency in Medical Physics Among MPs Who Had Completed an MP Residency, by Years of Professional Experience, 2009

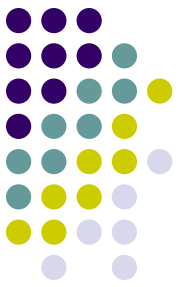


Source: CHWS, Survey of Medical Physicists, 2009, *Education* Question 4.

Another Glimpse at MP Response to Increased Demand

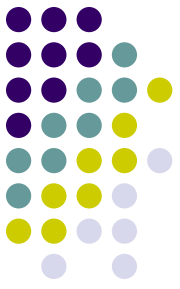


- **The MP professional experience cohort with 5 to 9 years experience looks a bit different from other experience cohorts in medical physics.**
- **These MPs entered the profession in 2000 to 2004 during a period of increased demand.**
 - ▶ 47% had a previous career
 - ▶ 9% obtained their highest degree in another country.
 - ▶ MPs in this cohort were the least likely to have a concentration in medical physics at the master's level (28%)
 - ▶ They were most likely to have learned about the profession during doctoral studies (17%) or post-doctoral fellowships (10%) or during other employment (18%)
 - ▶ They also had the highest rate of certification in radiology oncology physics (60%) of all professional experience cohorts



Implications of Findings

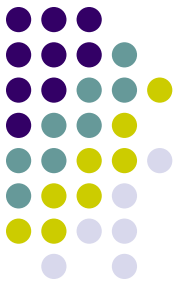
- **What does this mean?**
 - These professionals were working or studying in other, likely related, scientific disciplines and were attracted to the MP profession at a time of increased demand. This cohort was able to become certified because of the flexibility in certification requirements
- **What would be the current MP response to increased demand?**
 - There is some excess capacity in current workforce demonstrated by the willingness of MPs to expand work hours to provide more
 - × clinical services (33%),
 - × to do research (40%),
 - × to teach (42%) or
 - × to provide consulting services (50%).
- **Would this excess capacity be sufficient in case of another period of increased demand?**
 - Response from other professionals with similar levels of education in other scientific disciplines will now be very limited. Employer response in the absence of sufficient number of professionals could be to rely on delegation to technical support staff which is an economical and convenient response.



Recruitment

- **MPs participating in the recruiting process were**
 - Mostly in radiation oncology
 - Mostly in hospital settings
 - Most had PhDs and many years of experience
 - 50% recruited within the last year
 - Received on average 19 applications for a posted position.
 - 8 candidates met required qualifications, 6 met the preferred qualifications, the rest were not suited to the position. Suggests there could be improvement in education and clinical training.
 - Took between 15 and 20 weeks (mean 17 weeks) to find suitable candidate. Most difficult to find chief medical physicist. Least difficult to hire a staff physicist.
 - 69% of employers were able to hire their first choice candidate.
 - Suggests a period of lower demand permitting employers to be selective

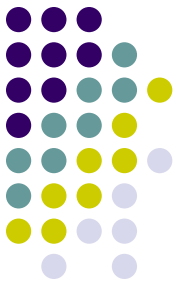
Preferred or Required Job Qualifications



Required or Preferred Qualifications for MP Employment, 2009

Qualifications for Employment	Required	Preferred
Experience in medical physics	67.7%	29.5%
Experience in physics or a related field	32.6%	22.9%
Graduate of accredited education program	8.5%	48.8%
Graduate of accredited residency program	2.7%	42.2%
Master's degree	72.3%	12.9%
PhD	17.2%	36.5%
Post-doctoral fellowship	1.7%	19.0%
Board certification	23.0%	55.8%
Other	3.5%	1.6%

Source: CHWS, Survey of Medical Physicists, 2009, *Recruitment* Question 2.
Note: Respondents were permitted to select more than one response so totals exceed 100%.



Successful Job Candidates

- Successful MP Job Candidates had a mean of 5.7 years of MP experience (Chief, mean of 14 years, Senior, mean of 12 years, Staff, mean of 5 years)

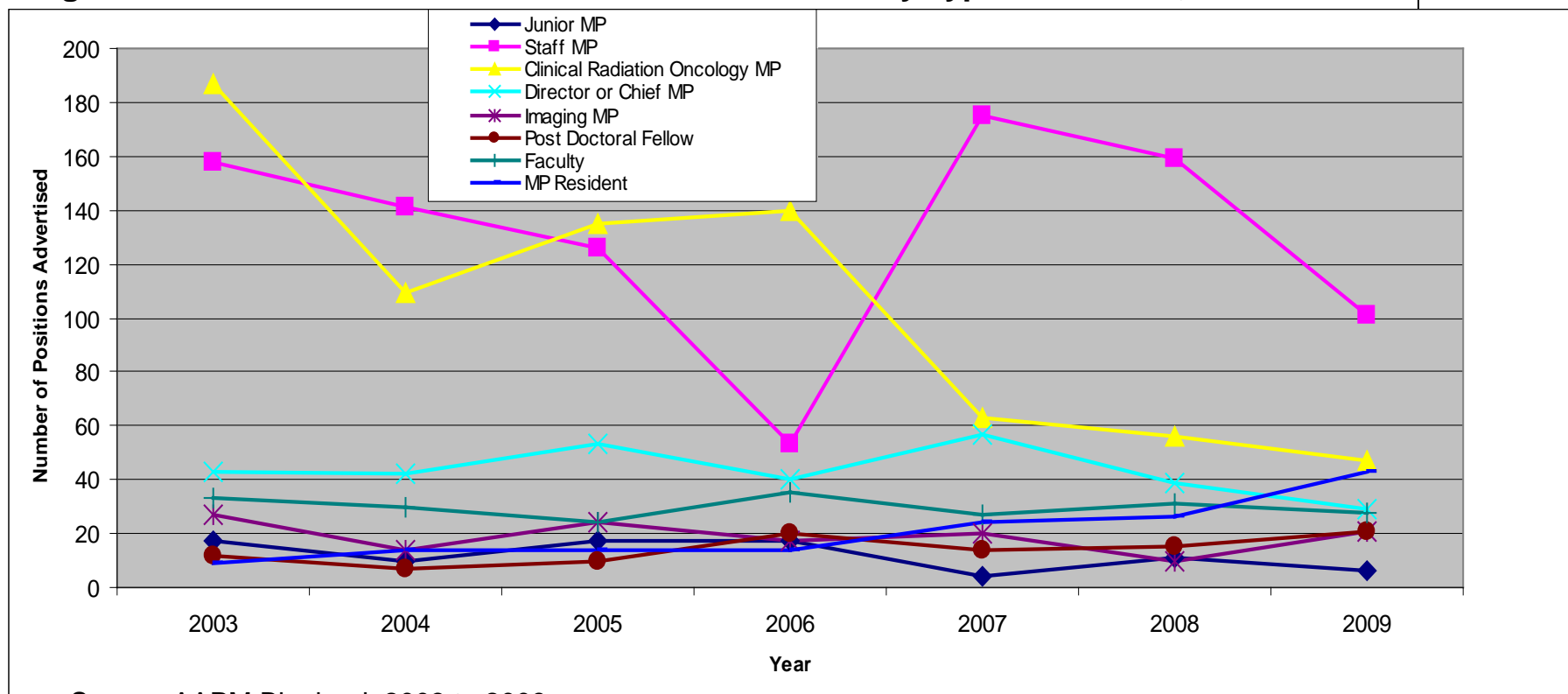
Qualifications of Successful MP Job Candidates, by Type of Position, 2009

Qualifications of the Successful Job Candidate	Chief MP	Senior Physicist	Staff Physicist	Total
Experience in medical physics	92.9%	88.7%	73.9%	75.0%
Experience in physics or a related field	35.7%	23.6%	24.9%	27.9%
Graduate of a accredited education program	14.3%	16.0%	29.5%	27.0%
Graduate of a accredited residency program	2.4%	4.7%	7.0%	6.9%
Master's degree	38.1%	51.9%	60.7%	54.4%
PhD	59.5%	40.6%	30.7%	37.6%
Post-doctoral fellowship	7.1%	3.8%	7.9%	9.1%
Board certified	73.8%	64.2%	20.2%	27.6%
Other	7.1%	6.6%	7.4%	7.3%

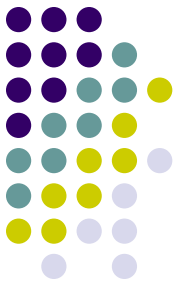
Source: CHWS, Survey of Medical Physicists, 2009, *Recruitment* Questions 4 and 7.



Figure 11. MP Positions Advertised in AAPM Bluebook by Type of Position, 2003 to 2009



Source: AAPM Bluebook 2003 to 2009



MP Satisfaction

- High levels of satisfaction in MP workforce
- 89% of MPs indicated career satisfaction was their main motivator to remain in practice.
- 92% of MPs either agreed or strongly agreed that work as an MP was very rewarding.
- 77% either agreed or strongly agreed that they were well compensated for their work.
- 85% of MPs would recommend the profession to others.